

WHAT IS CLAIMED IS:

1. A process for producing a peptide or a peptide derivative by using a reaction system of transcribing a DNA into an RNA and then translating the RNA produced or a reaction system of translating an RNA *in vitro* characterized in that a part or all of protein components constituting the reaction system are labeled with one of a pair of substances adhering to each other and the other substance of the pair is used as an adsorbent for capturing said labeled protein components after translating.

2. The process for producing a peptide or a peptide derivative as claimed in claim 1, wherein a plural number of combinations of said substance used for labeling a part or all of the protein components constituting the reaction system with said substance used as an adsorbent for capturing the labeled protein components are used in the process.

3. The process for producing a peptide or a peptide derivative as claimed in claim 1, wherein the protein components labeled with one of a pair of the substances adhering to each other are a part or all of factors and enzymes for the transcription or translation reaction.

4. The process for producing a peptide or a peptide derivative as claimed in claim 3, wherein said factors and enzymes for the transcription or translation reaction are selected from the group consisting of initiation factors,

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elongation factors, termination factors, aminoacyl-tRNA synthetase, methionyl-tRNA transformylase and RNA polymerase.

5. The process for producing a peptide or a peptide derivative as claimed in claim 1, wherein the protein components labeled with one of a pair of the substances adhering to each other are the factors and enzymes for the transcription or translation reaction and other enzymes required in the constitution of the reaction system.

6. The process for producing a peptide or a peptide derivative as claimed in claim 5, wherein said enzymes required in the constitution of the reaction system other than the factors and enzymes for the transcription or translation reaction are selected from the group consisting of enzymes for regenerating energy in the reaction system and enzymes for hydrolyzing inorganic pyrophosphoric acid formed during the transcription or translation reaction.

7. The process for producing a peptide or a peptide derivative as claimed in claim 1, wherein the reaction system for transcribing a DNA into an RNA and then translating the RNA produced or the reaction system translating an RNA *in vitro* is free from termination factors.

8. The process for producing a peptide or a peptide derivative as claimed in claim 1, wherein a pair of said substances adhering to each other are substances mutually interacting in affinity chromatography.

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9. The process for producing a peptide or a peptide derivative as claimed in claim 8, wherein the combination of said substances mutually interacting in affinity chromatography is selected from among combinations of substances capable of forming a bond between a protein or a peptide fragment and a metal ion, a bond between an antigen and an antibody, a bond between a protein and a protein or a peptide fragment, a bond between a protein and a specific low-molecular weight compound selected from the group consisting of amino acids, DNAs, dyes, vitamins and lectins, a bond between a protein and a saccharide, or a bond between a protein or a peptide fragment and an ion exchange resin.

10. The process for producing a peptide or a peptide derivative as claimed in claim 9, wherein said combination of substances forming a bond between a protein or a peptide fragment and a metal ion consists of histidine tag and a nickel complex or a cobalt complex.

11. The process for producing a peptide or a peptide derivative as claimed in claim 1, wherein a pair of said substances adhering to each other are substances magnetically adhering to each other.

12. A kit of protein components for a reaction system for producing a peptide or a peptide derivative by transcribing a DNA into an RNA and then translating the RNA produced or translating an RNA *in vitro* characterized in that the kit

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comprises a part or all of protein components constituting the reaction system and that the protein components are selected from the group consisting of enzymes and factors which are labeled with one of a pair of substances adhering to each other.

13. The kit of protein components as claimed in claim 12, wherein said protein components are selected from the factors and enzymes for the transcription or translation reaction and other enzymes required in the constitution of the reaction system.

14. The kit of protein components as claimed in claim 13, wherein said factors and enzymes for the transcription or translation reaction are selected from the group consisting of initiation factors, elongation factors, termination factors, aminoacyl-tRNA synthetase, methionyl-tRNA transformylase and RNA polymerase.

15. The kit of protein components as claimed in claim 13, wherein said enzymes required in the constitution of the reaction system other than the factors and enzymes for the transcription or translation reaction are selected from the group consisting of enzymes for regenerating energy in the reaction system and enzymes for hydrolyzing inorganic pyrophosphoric acid formed during the transcription or translation reaction.

16. The kit of protein components as claimed in claim 12 which comprises an adsorbent for capturing the protein

components labeled with one of a pair of the substances adhering to each other.

17. The kit of protein components as claimed in claim 12 which comprises a plural number of combinations or pairs of said substance used for labeling a part or all of the protein components constituting the reaction system with said substance used as an adsorbent for capturing the labeled protein components.

18. The product produced by the process of any one of claim 1 to claim 11.